National Climatic Data Center

DATA DOCUMENTATION

FOR

DATASET 9940 (DSI-9940)

U.S. Daily Snow Cover Grids

June 1, 2005

National Climatic Data Center
151 Patton Ave.
Asheville, NC 28801-5001 USA

:

Table of Contents

1. Abstract: U.S. Daily Snow Cover Grids is digital data set DS-9940, archived at the National Climatic Data Center (NCDC). SNOw Data Assimilation System (SNODAS) is a modeling and data assimilation system developed by the NOAA National Weather Services National Operational Hydrologic Remote Sensing Center (NOHRSC). Its purpose is to provide the best possible estimates of snow cover and associated variables to support hydrologic modeling and analysis.

The variables included in this archive are: Snow water equivalent, snow depth, snow melt runoff at the base of snow pack, Sublimation from the snow pack, Sublimation of blowing snow, Solid precipitation, Liquid precipitation, and Snow pack average temperature.

The aim of SNODAS is to provide a physically consistent framework to integrate snow data from satellite and airborne platforms, and ground stations with model estimates of snow cover. SNODAS includes procedures to ingest and downscale output form Numerical Weather Prediction (NWP) models; a physically based, spatially-distributed energy-and mass-balance snow model; and procedures to assimilate satellite-derived, airborne and ground-based observations of snow covered area and snow water equivalent.

The snow model has high spatial (1 km) and temporal (1 hour) resolutions and is run for the conterminous United States. SNODAS is run each day, forced by downscaled output from the RUC2 NWP model. Each day, analysts decide whether or not to use remote sensing and ground based observations to update the snow water equivalent state in the model. Difference fields between model and observed snow water equivalent are generated. The model is then re-run for the last 6 hours of the hindcast step using scaled difference fields to 'nudge' model estimates of the snow water equivalent estimates. A 12 hour forecast of snow cover is then made using NWP output.

2. Element Names and Definitions:

Potential users may want data as flat binary files, quick-look style images or in a format that can be ingested directly into GIS. Currently, SNODAS output is stored in flat binary files with a corresponding header file. Binary files can be read by user-written routines (e.g. Fortran and C programs), off the shelf image processing packages such as ENVI, IDL, MATLAB and ERDAS IMAGINE, and by GIS and other mapping packages such as GMT, GRASS and ARC/INFO. The header files written contain information to georegister grids contained by the binary files. Almost all GIS packages have tools to read binary grids. An example of one such tool is ARC/INFOs imagegrid tool. This tool ingest binary grids into ARC/INFOs GRID data format. Imagegrid requires a separate header file that contains grid dimensions and georegistration information. All of this information is included in the header file that correspond to SNODAS output grids. Other GIS packages have similar tools. NSDIC may consider adding a help page for GIS users to read binary data into their chosen GIS package. Scripts or GIS specific macros to extract header information required by GIS packages would enhance the usability of flat binary SNODAS output for GIS users. Alternatively NSIDC may consider providing SNODAS fields directly in GIS package formats.

More information can be found here:
http://www.nsidc.org/data/g02158.html

:
:

3. **Start Date**: 20031001

4. **Stop Date**: Present

5. **Coverage**:

   a. Southernmost Latitude: 24.0S
   b. Northernmost Latitude: 50.0N
   c. Westernmost Longitude: 125.0W
   d. Easternmost Longitude: 66.0E

6. **How to Order Data**:

   Ask NCDC's Climate Services about the cost of obtaining this data set.
   Phone: 828-271-4800
   FAX: 828-271-4876
   E-mail: **NCDC.Orders@noaa.gov**

7. **Archiving Data Center**:

   Archive Branch
   National Climatic Data Center
   151 Patton Avenue
   Asheville, NC 28801

8. **Technical Contact**:

   National Climatic Data Center
   151 Patton Avenue
   Asheville, NC 28801

9. **Known Uncorrected Problems**: None.

10. **Quality Statement**:

11. **Essential Companion Datasets**:

12. **References**:

:
: